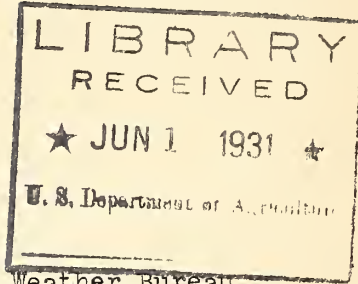


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GENERAL CONDITIONS

During the fiscal year beginning July 1, 1931, the Weather Bureau plans to have upper air observations made once daily at 8 different points throughout the country by means of automatic recording instruments carried aloft in airplanes. While morning observations are preferable, price or other considerations may make it necessary to utilize evening observations. In determining whether morning or evening observations will be contracted for, the aggregate cost of morning observations at the 8 different points will be compared with the aggregate cost of evening observations. If the aggregate thus developed for morning observations is satisfactory as to price and otherwise, awards for the 8 different points will be made on the basis of the lowest bids for morning flights; otherwise the awards will be made on the basis of the lowest bids as to price for evening flights.

SPECIFICATIONS

For making one airplane observation flight daily, Sundays and holidays included, for the Weather Bureau during the fiscal year beginning July 1, 1931, as follows:

- (a) For a daily flight started at 5 a.m. Eastern Standard Time, 4 a.m. Central Standard Time, 3 a.m. Mountain Standard Time, 2 a.m. Pacific Standard Time to 13,500 feet above ground.... \$..... for each flight.
- (b) For a daily flight started at 5 p.m., Eastern Standard Time, 4 p.m., Central Standard Time, 3 p.m., Mountain Standard Time, 2 p.m., Pacific Standard Time, to 13,500 feet above ground..... \$..... for each flight.

Note: Although flights must be begun as a rule at the time specified, latitude in beginning the flights earlier or later will be allowed under certain conditions set forth hereafter in these specifications.

IMPORTANT NOTICE

The lowest bidder will be determined separately for 5 a.m. flights, (a) above, and 5 p.m. flights, (b) above, and the award made on the basis of either (a) or (b), at the option of the Government, for one flight per day only.

DETERMINATION OF HEIGHT.

Should maximum elevations attained be greater or less than 13,500 feet above the ground level of the field from which the flights are started, payments made by the Government for each flight will be increased or reduced on the basis of the foregoing bids and according to the following scale:

For flights in excess of 13,500 feet above ground:

An addition of ten percent (10%) of the bid price for a flight to 13,500 feet above ground, for each additional unit of 1,500 feet or major fraction. (A major fraction is defined as over 750 feet above the

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highest 1500-foot level attained on the flight).

For flights less than 13,500 feet above ground:

12,000 to 13,499 feet, incl., a deduction of ten (10%) per cent of the bid price for a flight to 13,500 feet above ground.

10,500 to 11,999 feet, incl., a deduction of twenty (20%) per cent of the bid price for a flight to 13,500 feet above ground.

9,000 to 10,499 feet, incl., a deduction of twenty five (25%) per cent of the bid price for a flight to 13,500 feet above ground.

7,500 to 8,999 feet, incl., a deduction of thirty (30%) per cent of the bid price for a flight to 13,500 feet above ground.

6,000 to 7,499 feet, incl., a deduction of thirty five (35%) per cent of the bid price for a flight to 13,500 feet above ground.

4,500 to 5,999 feet, incl., a deduction of fifty (50%) per cent of the bid price for a flight to 13,500 feet above ground.

3,000 to 4,499 feet, incl., a deduction of sixty five (65%) per cent of the bid price for a flight to 13,500 feet above ground.

1,500 to 2,999 feet, incl., a deduction of eighty (80%) per cent of the bid price for a flight to 13,500 feet above ground.

Less than 1,500 feet no payment will be made for the flight.

(1) DEFINITION OF FLIGHT.

A flight will consist of making an airplane ascent (the airplane to be instrumentally equipped as hereinafter set forth), at a rate of ascent not greater than 500 feet per minute, but preferably about 300 feet per minute, to heights as indicated in these specifications. On the ascent the airplane must level off and remain at the 1,500 foot level for at least one minute and similarly at each additional 1,500 foot level, and also at the maximum elevation, even if the latter is not coincident with the last 1,500 foot level. After reaching the maximum altitude the plane will return to the ground as soon as practicable. No ascent of less than 1,500 feet above ground shall be deemed to constitute a flight within the meaning of these specifications. No flight, therefore, need be started unless, in the opinion of the contractor, an altitude of at least 1,500 feet above ground can be reached under prevailing flying conditions.

(2) SCHEDULE OF FLIGHTS.

Flights will be begun on July 1, 1931, and continue daily (Sunday and holidays included) thereafter to and including June 30, 1932. If weather conditions make it inadvisable to start any flight at the scheduled time it shall be started as soon thereafter as weather conditions permit; also, if indications are for unfavorable weather at the scheduled time, the contractor shall have the right to begin a flight before the scheduled time, but not to exceed two hours earlier than the scheduled time.

(3) LOCATION OF FLIGHTS.

The contractor will specify the Airport at which these observation flights will be made. Such airport must be located in the vicinity, i.e., within a radius of 20 miles of the City Weather Bureau Office or Weather Bureau Airport Office from which this proposal is issued. The Airport is _____

(Bidder to state the name of Airport.)

(4) EQUIPMENT.

To be furnished by the Contractor.

The contractor shall furnish the necessary airplane, licensed pilot and material and equipment customarily for airplane navigation, including altimeter. The contractor shall provide a suitable mounting apparatus for carrying an aero-meteorograph on the airplane. The position and means of mounting this instrument on the airplane must be approved by a representative of the Government.

At places where Department of Commerce radio-broadcast or radio-range stations are in operation the airplane making these flights must carry suitable radio receiving apparatus.

To be furnished by the Government.

The Government will furnish an aero-meteorograph (weight between 6 and 7 lbs.). No other supplies or equipment will be furnished by the Government. A representative of the Government will place the instrument in position on the airplane before each flight is begun and remove it from the airplane when the flight is terminated.

(5) WRITTEN REPORT OF FLIGHTS.

The contractor's pilot shall submit to the local representative of the Weather Bureau a written and signed report at the termination of each flight showing the time of reaching the maximum altitude and the altimeter reading at the maximum altitude. The report will also include information regarding cloud heights, ice formation on the airplane, and any other information of special interest.

(6) PAYMENT.

Payment will be made at the end of each month, or as soon thereafter as it is practicable to audit the vouchers at the Department of Agriculture, Washington, D. C., on the basis of the accepted bid price for each flight made (to 1,500 feet above ground or over, in accordance with these specifications), the height of which, will be computed and determined from the record by the Weather Bureau. In the event of failure of the meteorograph to record, payment will be made on the basis of the altimeter reading as provided for under (5) of these specifications. Such altimeter readings will be corrected, if necessary, by the Weather Bureau, in accordance with the previous general agreement found between altimeter indications and the height as computed in detail by standard Weather Bureau methods.

(7) CONTRACT.

Each bidder must furnish a guarantee bond or certified check drawn in favor of Disbursing Clerk, Department of Agriculture, as security in the amount of \$300.00 guaranteeing that he will not withdraw his bid within 30 days after the opening of same and that he will, if awarded the contract, execute formal contract and bond, such bond to be in the amount of \$3000.00.

(8) GENERAL.

(a) The contractor must employ pilots holding a limited commercial license or one of higher rating for making these flights; and also use airplanes duly inspected and licensed by the Department of Commerce.

The first part of the paper is devoted to a discussion of the general principles of the theory of the structure of the atom. It is shown that the structure of the atom is determined by the laws of quantum mechanics, which are based on the principle of the uncertainty of the position and momentum of the particles. The second part of the paper is devoted to a discussion of the experimental results obtained in the study of the structure of the atom. It is shown that the experimental results are in good agreement with the theoretical predictions of quantum mechanics.

The third part of the paper is devoted to a discussion of the application of the theory of the structure of the atom to the study of the properties of matter. It is shown that the theory of the structure of the atom can be used to calculate the properties of matter, such as the density, the refractive index, and the specific heat. The fourth part of the paper is devoted to a discussion of the application of the theory of the structure of the atom to the study of the properties of the radiation. It is shown that the theory of the structure of the atom can be used to calculate the properties of the radiation, such as the intensity, the frequency, and the polarization.

The fifth part of the paper is devoted to a discussion of the application of the theory of the structure of the atom to the study of the properties of the molecules. It is shown that the theory of the structure of the atom can be used to calculate the properties of the molecules, such as the molecular weight, the molecular volume, and the molecular energy. The sixth part of the paper is devoted to a discussion of the application of the theory of the structure of the atom to the study of the properties of the crystals. It is shown that the theory of the structure of the atom can be used to calculate the properties of the crystals, such as the crystal structure, the crystal density, and the crystal energy.

The seventh part of the paper is devoted to a discussion of the application of the theory of the structure of the atom to the study of the properties of the liquids. It is shown that the theory of the structure of the atom can be used to calculate the properties of the liquids, such as the liquid density, the liquid viscosity, and the liquid energy. The eighth part of the paper is devoted to a discussion of the application of the theory of the structure of the atom to the study of the properties of the gases. It is shown that the theory of the structure of the atom can be used to calculate the properties of the gases, such as the gas density, the gas viscosity, and the gas energy.

The ninth part of the paper is devoted to a discussion of the application of the theory of the structure of the atom to the study of the properties of the solids. It is shown that the theory of the structure of the atom can be used to calculate the properties of the solids, such as the solid density, the solid viscosity, and the solid energy. The tenth part of the paper is devoted to a discussion of the application of the theory of the structure of the atom to the study of the properties of the plasmas. It is shown that the theory of the structure of the atom can be used to calculate the properties of the plasmas, such as the plasma density, the plasma viscosity, and the plasma energy.

(b) The contractor will not be required to carry a Weather Bureau representative in the airplane making these flights.

(c) The contractor shall have the sole right of decision as to whether a flight should be made when weather conditions are unfavorable.

(d) The contractor shall, without additional expense to the Government, obtain all required licenses and permits and be responsible for all damages to persons or property that occur as a result of his fault or negligence in connection with the prosecution of the work.

(e) Liquidated damages will be at the rate of 20% of the contract price of one daily flight of 13,500 feet above ground, in accordance with these specifications, for each day's failure to make such flight when the failure is due to other than unfavorable weather conditions (See paragraph (c) above.)

(f) If in the judgment of the Official in Charge of the local Weather Bureau Office the contractor should fail to perform satisfactorily the airplane service required herein, he may obtain such service as is provided in these specifications in the open market and the contractor and his sureties will be held liable to the Government for any excess cost over the contract rate occasioned the Government thereby.

(g) The Government reserves the right to reject any or all bids.

